

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent application of:

Applicant(s): Paul A. Kohl et al.

Serial No: 09/717,567

Filing Date: November 21, 2000

Title: FABRICATION OF A SEMICONDUCTOR DEVICE WITH AIR GAPS
FOR ULTRA-LOW CAPACITANCE INTERCONNECTIONS

Examiner: James M. Mitchell

Art Unit: 2827

Docket No. PRMSP0217USA

REPLY TO OFFICE COMMUNICATION DATED OCTOBER 31, 2007

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In the Office communication dated October 31, 2007, the reply filed on August 23, 2007 was alleged to be not fully responsive because the reply did not specifically point out all of the supposed errors in the examiner's action dated February 23, 2007. Although referred to as an example, the communication only mentions one alleged deficiency, i.e. that no response was made to the examiner's reference to M.P.E.P. 2125 that a drawing can anticipate a claim and "it does not matter the feature shown is ... unexplained."

Applicants' undersigned representative respectfully disagrees with the examiner's contention that the reply was not fully responsive for the reason given by the examiner.

In applicants' reply it was pointed out that the skilled person reading the cited art would recognize that the gaps shown in the principal figure of the art could not be made by the process described therein and therefore such art does not and cannot anticipate or make obvious the uniformly shaped air-gaps of the instant application. This clearly addresses the examiner's reference to M.P.E.P. 2125 that a drawing can anticipate a claim, in that for the drawing to be anticipatory, it must be enabled. See M.P.E.P. 2121.01 which in pertinent part reads as follows:

"In determining that quantum of prior art disclosure which is necessary to declare an applicant's invention 'not novel' or 'anticipated' within section 102, the stated test is whether a reference contains an 'enabling disclosure'... ." *In re Hoeksema*, 399 F.2d 269, 158 USPQ 596 (CCPA 1968). The disclosure in an assertedly anticipating reference must provide an enabling disclosure of the desired subject matter; mere naming or description of the subject matter is insufficient, if it cannot be produced without undue experimentation. *Elan Pharm., Inc. v. Mayo Found. For Med. Educ. & Research*, 346 F.3d 1051, 1054, 68 USPQ2d 1373, 1376 (Fed. Cir. 2003) (At issue was whether a prior art reference enabled one of ordinary skill in the art to produce Elan's claimed transgenic mouse without undue experimentation. Without a disclosure enabling one skilled in the art to produce a transgenic mouse without undue experimentation, the reference would not be applicable as prior art.). A reference contains an "enabling disclosure" if the public was in possession of the claimed invention before the date of invention. "Such possession is effected if one of ordinary skill in the art could have combined the publication's description of the invention with his [or her] own knowledge to make the claimed invention." *In re Donohue*, 766 F.2d 531, 226 USPQ 619 (Fed. Cir. 1985). (emphasis added)

The lack of enablement was documented by way of Mr. Berman's declaration wherein Mr. Berman, a person skilled in the art, stated that based upon the art's description of the process employed for dielectric deposition, there was no deposition method known at the time such art was created that could have formed the air gap shape shown in Masaaki. Furthermore, he stated that even with the advances in deposition technology that have become known today, it is still impossible for such a uniformly shaped structure to be formed by deposition. Still further he noted that these statements are facts widely known to those of ordinary skill in the art and such knowledge is demonstrated by and through the several recent publications appended to the declaration.

Thus, the examiner's comments regarding M.P.E.P. 2125 were a moot point in view of the lack of enablement. It does not matter whether or not the shape feature of the reference is explained. If the shape feature is not enabled, it cannot be relied on to anticipate the claimed feature of air gaps that are of uniform width over the height thereof.

Regarding the rejections not based alone or in part on the asserted shape feature of Masaaki, it is noted that the discussions with Supervisory Primary Examiner Carl Whitehead Jr. were also reflected in the remarks presented in the reply to the

Office Action dated May 31, 2006, which remarks were repeated by reference. The undersigned was of the understanding that these other rejections had been resolved during the interview and further commentary was not needed.

Regarding the rejections of claims 68-71 as being anticipated by or unpatentable over Avanzino, claim 68 previously was amended to recite "a surface of the conductive material adjacent a respective air gap is covered by a discrete film of non-conducting material that does not extend over the conductive material nor beyond the air gap." The Examiner had previously clarified the basis for his rejection and the foregoing change was made to address the point raised by the Examiner. In the last Office Action, the Examiner repeated his earlier rejections relating to the claim language prior to the aforesaid amendment, and thus it was believed that the aforesaid amendment resolved the rejections of claims 68-70. That is, the Examiner in his statement of the rejection referred to "does not extend over the conductive material beyond the air gap" whereas the language of the amended claim is "does not extend over the conductive material nor beyond the air gap".

Regarding the rejection of claim 74 as being unpatentable over Avanzino, it previously was also pointed out that the skilled person will appreciate that the provision of air gaps having upper sides that are parallel to the planar extent of the substrate will provide performance characteristics of the semiconductor device that are different from those afforded by the air gaps taught by Avanzino. In particular, the dielectric effect of the air gap will be substantially different given the tapered top side of the air gap in Avanzino and the squared top side of the air gap illustrated in Fig. 2F. The rejection of claim 74 should therefore be withdrawn for this additional reason.

Again it is respectfully submitted that the prior reply was fully responsive, and that this application is in condition for allowance.

Respectfully submitted,

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